Amendment to the Claims:

The claims under examination in this application, including their current status and changes made in this paper, are respectfully presented.

1 (original). A method for training branch-specific prefilters in a receiver having at least two input branches, the input branches receiving branch-specific signals transmitted across communications channels, each branch-specific signal containing data from a target transmitter and possibly also interference, the method comprising:

determining a frequency response of a conditioned channel that suppresses the interference, wherein the frequency response is determined without reference to the branch-specific prefilters; and

computing frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel.

2 (original). The method of claim 1 wherein the step of determining the frequency response of the conditioned channel comprises:

determining the frequency response of the conditioned channel, assuming lengths of the branch-specific prefilters are infinite.

3 (original). The method of claim 1 wherein the step of determining the frequency response of the conditioned channel comprises:

determining an impulse response of the conditioned channel without reference to the branch-specific prefilters; and

transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel.

4 (original). The method of claim 1 wherein the step of determining a frequency response of a conditioned channel comprises:

determining the conditioned channel as a linear predictive filter of a residual error between (i) an original signal before transmission across the communications channels; and (ii) a composite signal that combines the branch-specific received signals after transmission across the

communications channels as filtered by a branch-specific equalizer, wherein the branch-specific equalizers collectively comprise an optimum space-time linear equalizer.

5 (currently amended). The method of claim 4 wherein the step of determining the frequency response of the conditioned channel comprises:

determining frequency responses of the communications channels from the transmitters to the input branches;

computing a frequency-dependent signal-to-noise-plus-interference ratio (SNIR) from the frequency responses of the communications channels;

inverse transforming a function of the frequency-dependent SNIR to obtain an autocorrelation function;

computing an impulse response of the conditioned channel from the autocorrelation function; and

transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel.

6 (original). The method of claim 5 wherein the step of computing a frequency-dependent SNIR from the frequency responses of the communications channels comprises:

calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and

computing the frequency-dependent SNIR from the noise-plus-interference correlation matrix and the frequency responses of the communications channels from the target transmitter to the input branches.

7 (original). The method of claim 4 wherein the step of computing the frequency responses of the branch-specific prefilters comprises:

computing the frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel and the frequency responses of the communications channels in order to optimize a preselected performance metric.

8 (original). The method of claim 7 wherein the step of computing the frequency responses of the branch-specific prefilters comprises:

calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and

computing the frequency responses of the branch-specific prefilters from the noise-plus-interference correlation matrix, the frequency response of the conditioned channel and the frequency responses of the communications channels from the target transmitter to the input branches.

9 (original). The method of claim 1 wherein the step of determining the frequency response of the conditioned channel is non-iterative.

10 (original). The method of claim 1 wherein a delay spread of the conditioned channel is one symbol duration.

11 (original). The method of claim 1 wherein the conditioned channel has a delay spread that is shorter than a delay spread of the effective communications channels from the target transmitter to the input branches.

12 (original). The method of claim 1 further comprising:

receiving the branch-specific signals transmitted across the communications channels;

applying the branch-specific prefilters to the received, branch-specific signals; and

combining the prefiltered, branch-specific signals to generate a composite, prefiltered signal; and

processing the composite, prefiltered signal to estimate the data from the target transmitter.

13 (original). The method of claim 12 wherein the step of processing the composite, prefiltered signal comprises:

processing the composite, prefiltered signal according to maximum likelihood sequence estimation.

14 (original). The method of claim 12 wherein the step of processing the composite, prefiltered signal comprises:

determining a confidence level of the estimate of the data.

15 (original). The method of claim 14 further comprising:

decoding the estimate of the data, based in part on the confidence level of the estimate.

16 (original). The method of claim 1 further comprising:

inverse transforming the frequency responses of the branch-specific prefilters to obtain branch-specific tap weights for impulse responses of the prefilters; and

for each input branch, applying the branch-specific tap weights to the signal received by the input branch.

17 (original). The method of claim 1 wherein the data is transmitted in packets across the communications channels.

18 (original). The method of claim 1 wherein the communications channels are wireless.

19 (original). The method of claim 18 wherein the interference is generated by transmitters that are located in geographically separated cells from the target transmitter but use a same radio frequency as the target transmitter.

20 (original). A receiver for receiving at least two branch-specific signals transmitted across communications channels, each branch-specific signal containing data from a target transmitter and possibly also interference, the receiver comprising:

a training module comprising:

a first module for determining a frequency response of a conditioned channel that suppresses the interference, wherein the frequency response is determined without reference to the branch-specific prefilters; and

a second module for computing frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel; and

prefilter modules coupled to the training module for applying the branch-specific prefilters to the branch-specific received signals.

21 (original). The receiver of claim 20 wherein the first module determines the frequency response of the conditioned channel, assuming lengths of the branch-specific prefilters are infinite.

22 (original). The receiver of claim 20 wherein the first module comprises:

a module for determining an impulse response of the conditioned channel without reference to the branch-specific prefilters; and

an FFT for transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel.

23 (original). The receiver of claim 20 wherein the first module determines a conditioned channel as a linear predictive filter of a residual error between (i) an original signal before transmission across the communications channels; and (ii) a composite signal that combines the branch-specific received signals after transmission across the communications channels as filtered by a branch-specific equalizer, wherein the branch-specific equalizers collective comprise an optimum space-time linear equalizer.

24 (currently amended). The receiver of claim 23 wherein the first module comprises:

a module for determining frequency responses of the communications channels from the transmitters to the input branches;

a first computational module for computing a frequency-dependent signal-to-noise-plus-interference ratio (SNIR) from the frequency responses of the communications channels;

an inverse FFT for inverse transforming a function of the frequency-dependent SNIR to obtain an autocorrelation function;

a second computational module for computing an impulse response of the conditioned channel from the autocorrelation function; and

a second FFT for transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel.

25 (original). The receiver of claim 24 wherein the first computational module comprises:

a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and

a computational module for computing the frequency-dependent SNIR from the noise-plus-interference correlation matrix and the frequency responses of the communications channels from the target transmitter to the input branches.

26 (original). The receiver of claim 23 wherein the second module computes the frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel and the frequency responses of the communications channels in order to optimize a preselected performance metric.

27 (original). The receiver of claim 26 wherein the second module comprises:

a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and

a computational module for computing the frequency responses of the branch-specific prefilters from the noise-plus-interference correlation matrix, the frequency response of the conditioned channel and the frequency responses of the communications channels from the target transmitter to the input branches.

28 (original). The receiver of claim 20 wherein the first module determines the frequency response of the conditioned channel in a non-iterative manner.

29 (original). The receiver of claim 20 wherein a delay spread of the conditioned channel is one symbol duration.

30 (original). The receiver of claim 20 wherein the conditioned channel has a delay spread that is shorter than a delay spread of the effective communications channels from the target transmitter to the input branches.

31 (original). The receiver of claim 20 further comprising:

a sequence estimator coupled to the prefilter modules for combining the prefiltered, branch-specific signals to generate a composite, prefiltered signal; and further for processing the composite, prefiltered signal to estimate the data from the target transmitter.

32 (original). The receiver of claim 31 wherein the sequence estimator comprises a maximum likelihood sequence estimator.

33 (original). The receiver of claim 31 wherein the sequence estimator determines a confidence level of the estimate of the data.

34 (original). The receiver of claim 33 further comprising:

a decoder coupled to the sequence estimator for decoding the estimate of the data, based in part on the confidence level of the estimate.

35 (original). The receiver of claim 20 further comprising:

an inverse FFT for inverse transforming the frequency responses of the branch-specific prefilters to obtain branch-specific tap weights for impulse responses of the prefilters, wherein the prefilter modules are coupled to receive the tap weights from the inverse FFT.

36 (original). The receiver of claim 20 further comprising:

a front-end with at least two input branches.

37 (original). The receiver of claim 20 wherein the data is transmitted in packets across the communications channel.

38 (original). The receiver of claim 20 wherein the training module is adapted for a wireless communications channel.

39 (original). The receiver of claim 20 wherein the training module and the prefilter module are implemented as circuitry on a single integrated circuit.